Credit Constraints and Capital Misallocation in Agriculture

Theory and Evidence from Uganda

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Brac, 14 December 2018

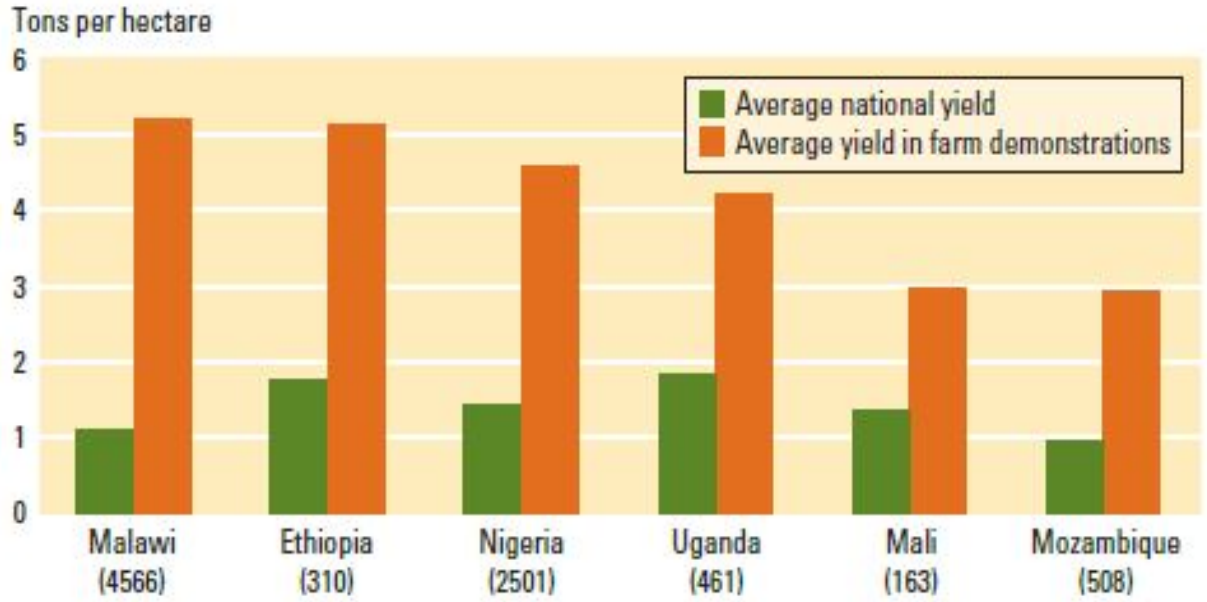
Outline

1. Motivation
2. Our Approach
   - The Setting: Agricultural Firms
3. Results
   - Main Results
   - Policy Recommendations

INVESTMENT LAGGING BEHIND I

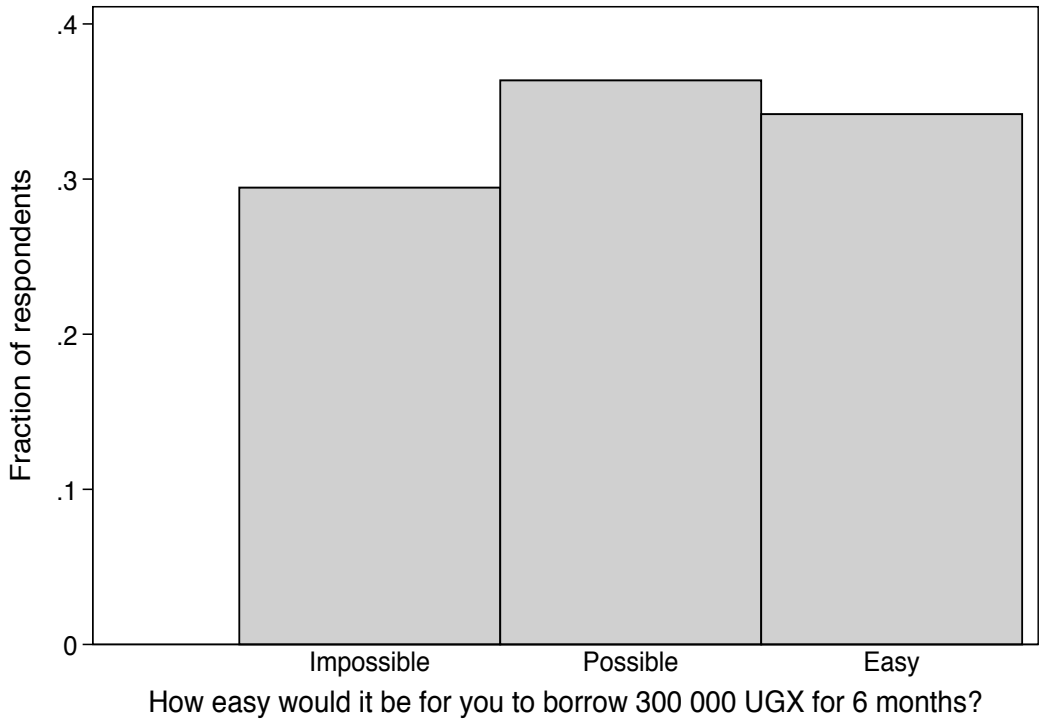
- A problem for firms in developing countries: low capital investment (tools, machinery, etc)
- Low investment can result in low productivity

The case of agricultural firms:



INVESTMENT LAGGING BEHIND II

- **Liquidity and credit constraints** play a big role
  - Firms cannot borrow (high interest rate, no collateral)
  - Firms do not want to borrow (consider too risky)
- Our agricultural firms are *credit constrained*:



TODAY'S QUESTION

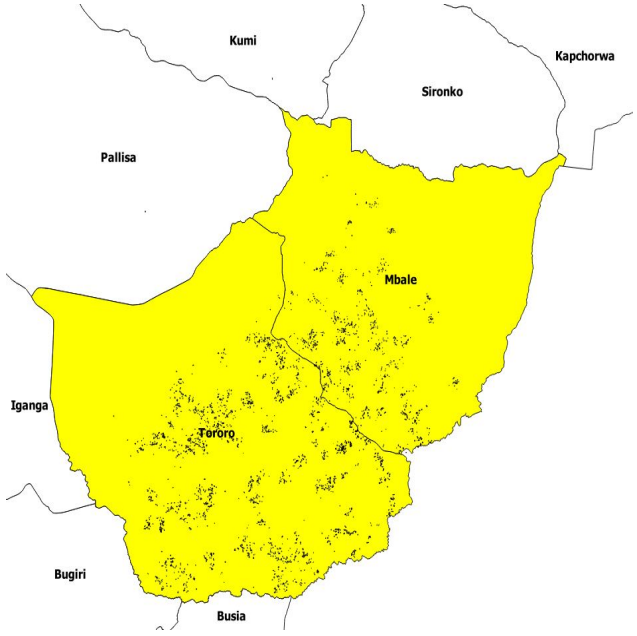
Do firms invest in fertilizer if we relax their credit constraints?

- Measure truthful maximum willingness-to-pay (WTP) for fertilizer
- Compare WTP of farmers whose constraints are relaxed vs. non-relaxed

$\Longrightarrow$ if **non-constrained** farmers have **higher WTP** than constrained ones, evidence that *credit constraints matter* for investment

AGRICULTURAL FIRMS

- We work with 1200 maize farms in Eastern region



- Intervention in two stages:
  1. **Lottery ticket:** can win 5,000 UGX or 200,000 UGX
  2. **Investment opportunity:** buy 50Kg DAP & 50Kg CAN bundle

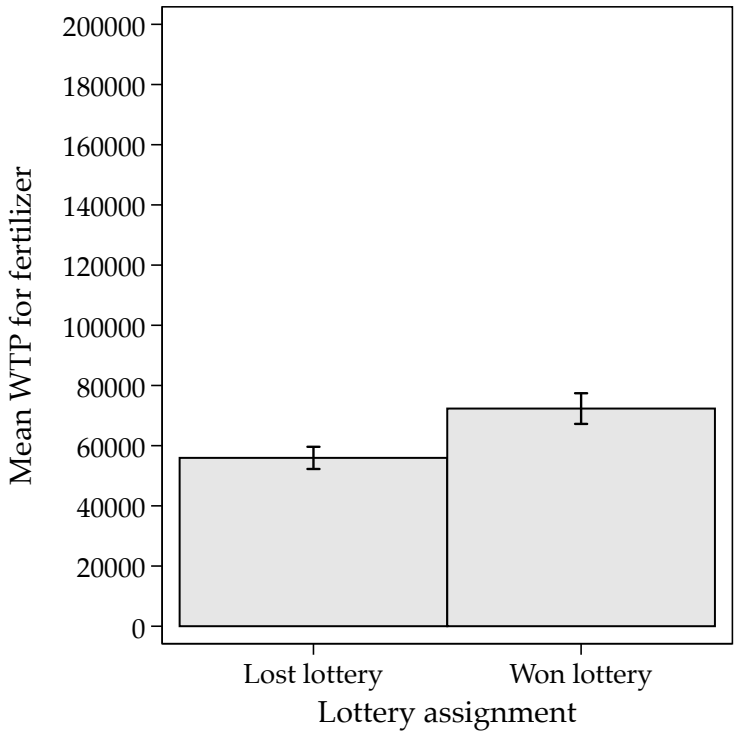
Measuring Willingness-to-Pay

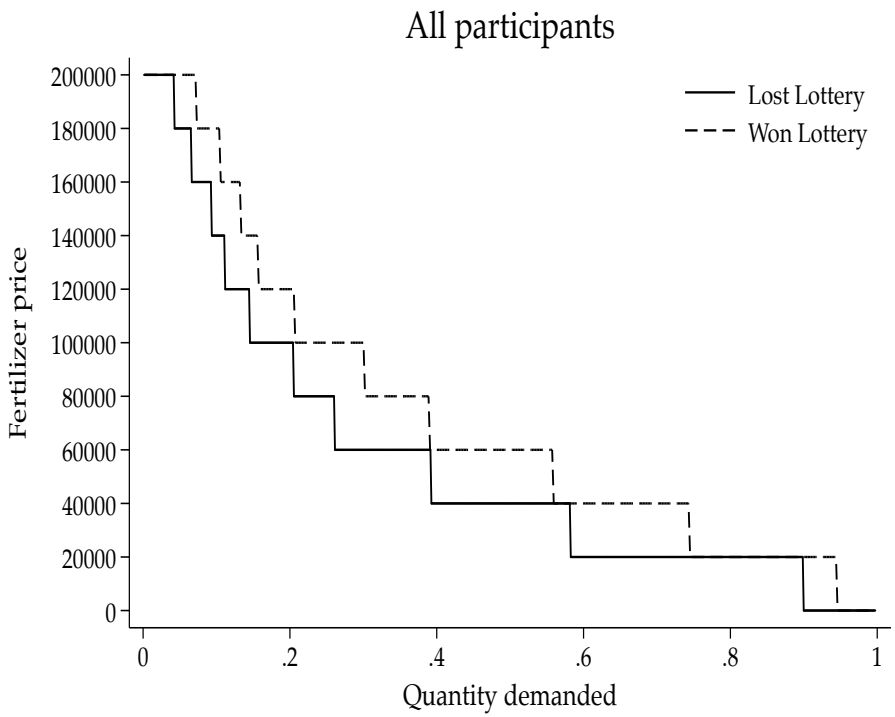
What is the **maximum** amount a household is willing to pay to buy the bundle of fertilizer?

- Typical problem: people underreport in hope of a low price
- The method we use (BDM) rewards truthful reporting
- It works like an auction:
  1. They tell us the maximum amount they are willing to pay
  2. Then we reveal the (predetermined, random) price
  3. They can only buy if they were willing to pay at least that price
  4. They only pay the predetermined price
- Reporting lower willingness-to-pay **cannot decrease** the price they pay, but might mean they **do not get to buy** the fertilizer
- Use multiple practice stages and comprehension checks to ensure understanding

Measuring Willingness-to-Pay

Fewer Constraints, More Investment





Next steps

Our ongoing work:

- Today we showed you how willingness-to-pay responds to relaxing constraints
- We also have detailed household- and plot-level information on yields, incomes, expenditures.
- Can use these to measure how willingness-to-pay relates to the **profitability of fertilizer**
- Crucial question 1: does the fertilizer market sell fertilizer to those who **profit most**?
- Crucial question 2: when we relax constraints, do we bring **high-profitability** or **low-profitability** people into the market?
- Key questions for policies that seek to improve yields and rural incomes.

Policy Tools To Reach Most Profitable Firms?

- **Subsidies**
  - (+) increase adoption and food production (Malawi)
  - (+) reduce risk for early adopters
  - (–) subsidize farmers who would invest anyway, encourage firms with lower returns to invest, overuse (Zambia)
  - (–) expensive for gov't budget, money could be used on public goods instead (India)
- **Cash Transfers, credit market policies**
  - (+) Make investment feasible to firms with higher returns (our question)
  - (+) Allow for purchase of complementary inputs (Mexico)
  - (–) Targeting is difficult (Zambia)
  - (–) Administrative costs (Ethiopia), elite capture (India)

Summary

- Investment in productive capital is low among agricultural firms in Uganda, but firms want to invest
- Firms with higher returns may not realize them because of credit constraints
- Important to choose right policy tools to achieve growth potential (price subsidies or cash transfers)

- Looking forward
  - Do farmers who profit most from fertilizer buy it?
  - Do subsidies encourage fertilizer purchase from high-profit or low-profit firms?